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FIFTEEN YEARS OF ACTIVITY OF THE INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES USSR

S. Z. Ratner

INTRODUCTION

There are three stages in the development of the Institute: (1) Electronic Phenomena Laboratory, (2) Division of Physical Chemistry, and (3) Institute of Chemical Physics.

1. Electronic Phenomena Laboratory (organized in 1921 as part of the Physico-Technical Institute)

Head: N. N. Semenov

Objectives: To develop electronic chemistry and apply it to chemical problems.

Members: Yu. B. Khariton, V. N. Kondrat'ev, A. I. Leypunskiy, A. I. Shal'nikov, A. F. Val'ter, and others.

The following is a list of the chief projects at the laboratory during the 5 years of its existence (1921-26):

Name	Project
Fok	Heat theory of dielectric breakdown.
Frenkel'	Critical temperature of condensation. Co-author of book, Electrynic Chemistry.
Khariton	Critical temperature of condensation. Co-author of book, Electronic Chemistry.

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Name	Project
Kondrat'yev	Dissociation of molecules into atoms by electronic bombardment. Recombination of normal and activated halogen atoms. Co-author of book, Electronic Chemistry.
Leypunskiy	Recombination of normal and activated hydrogen atoms.
Semenov	Dissociation of molecules into atoms by electronic bombardment. Heat theory of dielectric breakdown. Critical temperature of condensation. Co-author of book, Electronic Chemistry. Author of book Electronic Phenomena.
Val'ter	Heat theory of dielectric breakdown.

2. Division of Physical Chemistry

In 1926 the Laboratory of Electronic Phenomena became the Physical Chemistry Division of the Physico-Technical Institute. In addition to continuing work on its previous projects, its scope was widened so as to include chemical kinetics. Among the new workers were A. A. Kovalskiy, M. B. Neyman, S. Z. Roginskiy, A. S. Sokolnik, and A. V. Zagulin.

The following is a list of the chief projects of the Division during the 5 years of its existence (1926-31):

Name	Project
Kharitan	Oxidation of phosphorus at low pressures.
Koudrat'yev	Transmission of various forms of energy by molecular bombardment.
Koval'skiy	Combustion of phosphorus, sulphur, and carbon monoxide.
Roginskiy	Condensation of stable colloids of the alkali metals in organic solvents.
Ryabinin	Combustion of phosphorus, sulphur, and carbon monoxide.
Semenov	Combustion of phosphorus, sulphur, and carbon monoxide.
Shal'nikov	Combustion of phosphorus, sulphur, and carbon monoxide. Condensation of stable colloids of alkali metals in organic solvents.
Shekhter, A. B.	Dissociation of molecules by bombardment with positive ions.
Trifonov	Combustion of phosphorus, sulphur, and carbon monoxide.

During this period, Semenov and his fellow workers began to keep in touch with the Institute imeni Karpov.

3. Institute of Chemical Physics.

In 1931 the Division of Physical Chemistry became the Institute of Chemical Physics. S. M. Kirov gave considerable assistance in the organization of the Institute. The basic character of its work remained as before, but more attention was paid to the study of combustion of gases, especially in regard to internal-combustion engines and explosives. A Catalysis Laboratory was also set up, headed by S. Z. Roginskiy. (This laboratory was incorporated into the Institute of

Physical Chemistry, Academy of Sciences USSR in 1942.) The new personnel may be divided into three categories:

(a) Graduates of the Physico-Mechanical Institute: A. F. Belyaev, N. M. Emanuel', O. I. Leypunskiy, O. M. Todes, and I. L. Zel'manov.

(b) Graduates of Outlying Higher Educational Institutions (VUZI): A. Ya. Apin (Kazan'), N. M. Chirkov (Voronezh), D. A. Frank-Kamenetskiy (Irkutsk), A. B. Nalbandyan (Yerevan), K. I. Shchelkin (Simferopol').

(c) Nongraduate Students: M. A. Ribin, Ya. B. Zel'dovich, and P. Ya. Sadovnikov (killed during World War II).

The Institute was moved from Leningrad to Moscow in May 1943.

The following is a list of the chief projects of the Institute from 1931 to 1946:

Name	Project
Belyaev	Theory of flame propagation in gases, explosives, and powders.
Emanuel'	Labile intermediate compounds.
Frank-Kamenetskiy	Spontaneous combustion.
Khariton	Explosives.
Kondrat'yev	Labile intermediate compounds (Stalin Prize, 1943-44).
Neyman	Labile intermediate compounds.
Roginskiy	Catalysis (Stalin Prize, 1940). Fuel Chemistry.
Semenov	Chain reactions (Stalin Prize, 1940). Cold flames. Spontaneous combustion.
Shchelkin	Detonation of gases.
Sokolik	Detonation of gases. Knocking in internal combustion engines.
Todes	Spontaneous combustion.
Zel'dovich	Theory of flame propagation in gases, explosives, and powders. Detonation of gases (Stalin Prize, 1942).

CONCLUSION

In June 1945, in connection with the Jubilee of the Academy of Sciences USSR, 22 members of the Institute received orders and medals.

In June 1946, Director of the Institute, Academician N. N. Semenov, received the order of the Red Banner of Labor on his fiftieth birthday.

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